

### ABSTRACT

Disclosed is a wideband variable gain amplifier with high linearity that operates in a switch mode. The variable gain amplifier includes a first amplifier unit, a second amplifier unit and a third amplifier unit. The first amplifier unit includes an amplifier, a wideband-matching element, an attenuator and first switching means. The first amplifier unit supports a high gain mode operation and a low gain mode operation. In the high gain mode, the first switching means is short-circuited and an input signal is amplified with a high gain. It is thus possible to reduce noise characteristics of the entire system by a rear stage. In the low gain mode, the first switching means is opened and the input signal is attenuated by the attenuator without an amplification operation. It is thus possible to reduce a non-linearity occurring by the rear stage of the first amplifier unit. According to another embodiment of the present invention, only the first amplifier unit can be independently used in order to amplify a signal. Furthermore, a variable gain amplifier can be implemented by connecting various combinations of the second amplifier unit and the third amplifier unit at the rear of the first amplifier unit.